

1998 HERD UNIT CLASSIFICATION OF ROOSEVELT ELK IN REDWOOD NATIONAL AND STATE PARKS

By Rick Wallen
Fish and Wildlife Biologist
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INTRODUCTION

Annual classifications of Roosevelt elk in RNSP are important data for documenting relative abundance and simple population dynamics characteristics. Wallen (1997) identified elk data needs, management questions and recommendations for long term monitoring.

METHODS

During 1998, classification counts were conducted opportunistically by Fish and Wildlife Branch staff. In addition, the population ecology class at Humboldt State University assisted by conducting three separate counts along two different transects during November. All observers used binoculars and spotting scopes to insure a good view of the animals. Rick Wallen lead a field trip with the class on 24 October to teach the students some strategies and give them some confidence to perform the field work unsupervised.

RESULTS

Sixty-five individual groups of elk were classified in 1998 (Tables 1 through 8). Classification data for the Elk Prairie and the Bypass herd units are again strikingly similar. This year's data provides further support for the idea that one herd unit uses both areas. Classifications in the Bald Hills area resulted in very few observations of mature bulls this year. Occasional observations of elk were reported for the Crescent City and Coastal Drive areas of RNSP. These areas were not systematically surveyed in 1998 because of low probability of detecting a herd unit. One animal was observed near the Crescent City Environmental Education Center wearing a radio collar (K. Fuller pers. comm.).

Table 1. Bald Hills elk classification count data								
Location	Observers	Sample Period	Bull	Spike	Cow	Calf	Total	Rating
Williams ridge	Wallen/Kent	4-Dec	0	6	47	19	72	2
Copper Creek	Wallen/Kent	4-Dec	0	0	2	2	4	1
Maneze Prairie	Wallen/Kent	4-Dec	0	0	13	2	15	1
Schoolhouse pk	Wallen/Kent	4-Dec	0	5	24	4	33	2
Sm. Mammal grid	Wallen/Kent	4-Dec	0	1	12	3	16	1
Total for all groups observed on 4 Dec			0	11	98	30	140	
Copper Creek	HSU field trip	24-Oct					40	4
Long Ridge	HSU field trip	24-Oct	3	4	20	6	33	2
Counts Prairie	Wallen	5-Nov	1	2	15	6	24	1
Pond @ Rock Fork	Wallen	5-Nov	4	1	46	16	67	1
Long ridge	Wallen	5-Nov	0	1	19	5	25	1
Sm. Mammal grid	Wallen	5-Nov	0	9	5	1	15	1
Total for all groups observed on 5 Nov			5	13	85	28	131	

Table 2. Davison Ranch elk classification count data								
Location	Observer	Sample Period	Bull	Spike	Cow	Calf	Total	Rating
north side	JPD, LC,NF,SS	14-Nov	14	0	0	0	14	2
south side	JPD, LC,NF,SS	14-Nov	?	?	?	?	~40	4
north side	Hillary et. al.	14-Nov	16	0	0	0	16	1
south side	Hillary et. al.	14-Nov	3	4	36	12	55	?
south side	Sonja et. al.	8-Nov	4	1	14	0	19	3
south side (later)	Sonja et. al.	8-Nov	3	3	34	5	45	3
west of ranch on road	Sonja et. al.	8-Nov	1	0	0	0	1	1
ARCO office	CM,BB,MP	15-Nov	16	0	0	0	16	1
east of hwy.	HSU field trip	24-Oct	1	3	30	6	40	2
north side	HSU field trip	24-Oct	19	0	0	0	19	2
south side	Wallen/Weckerly	26-Jun	2	1	36	4	43	1
north side	Baldwin/Wallen	30-Sep	6	0	13	4	23	2
south side	Wallen	15-Oct	1	2	37	6	46	2
north side	Wallen	15-Oct	16	0	0	0	16	1
2 groups- north	Wallen/Falvey	12-Nov	17	3	42	6	68	2

Table 3. Elk Prairie elk classification data								
Location	Observers	Sample Period	Bull	Spike	Cow	Calf	Total	Rating
east side	Bill et. al.	7-Nov	1	0	21	1	23	1
NE of shop	Wallen/Weckerly	26-Jun	2	2	21	5	30	2
S. of shop	Wallen	7-Aug	1	2	20	5	28	1

Table. 4 Bypass elk classification data								
Location	Observers	Sample Period	Bull	Spike	Cow	Calf	Total	Rating
0.75 N. of south end	Trevor et. al.	15-Nov	1	0	19	6	26	2
	Wallen	10-Nov	1	0	20	5	26	2
	Wallen	22-Oct	0	0	9	0	9	2

Table 5. Lower Redwood Creek elk classification data								
Location	Observers	Sample Period	Bull	Spike	Cow	Calf	Total	Rating
Creekbed	Bill et. al.	7-Nov	2	0	0	0	2	2
Creekbed by Mill entrance	HSU field trip	24-Oct	5	0	0	0	5	1
Dike	Gordon	1-Jul	3	1	19	3	26	1
Hillslope So. Of dike above McNamaras	Wallen/Falvey	18-Nov	7	1	26	4	38	2
Creek bed	Falvey	19-Nov	1	0	0	0	1	1

Table 6. South Operations Center elk classification data								
Location	Observers	Sample Period	Bull	Spike	Cow	Calf	Total	Rating
Near entrance north meadow shop shop	Wallen/Sakai	1-Jul	8	2	14	2	26	1
	Wallen/Baldwin	30-Sep	6	0	13	4	23	2
	Wallen	22-Oct	1	0	9	4	14	1
	Wallen	22-Oct	4	1	0	0	5	1
	Bill et. al.	7-Nov	7	2	15	1	25	1
shop	Wallen/Kent	4-Dec	3	1	13	4	21	1

Table 7. Gold Bluffs Beach elk classification data								
Location	Observer	Sample Period	Bull	Spike	Cow	Calf	Total	Rating
0.9 mi. N. of kiosk	JPD, LC,NF,SS	14-Nov	4	0	0	0	4	1
3.0 mi. N. of kiosk	JPD, LC,NF,SS	14-Nov	4	0	0	0	4	1
1.5 mi. N. of kiosk	JPD, LC,NF,SS	14-Nov	1	0	0	0	1	1
0.5 mi. N. of kiosk	Hillary et. al.	14-Nov	4	0	0	0	4	1
1.2 mi N. of kiosk	Hillary et. al.	14-Nov	1	0	0	0	1	1
0.5 mi.S of Fern Can. road	Hillary et. al.	14-Nov	4	0	0	0	4	1
	Sonja et. al.		2	1	0	0	3	1
Boat Ck. Cliff	Wallen/Sakai	10-Jul	1?	3?	33	2	39	2
S. of Campground	Wallen/Sakai	10-Jul	7					
S. of Fern Canyon TH	Wallen	15-Oct	1	3	32	4	40	1
1/2 mi. N. of Boat Ck	Wallen/Falvey	12-Nov	0	2	14	2	18	1
Near kiosk	Wallen/Falvey	12-Nov	3	0	0	0	3	1
N. of Ossagon	Falvey/Childers	1-Dec	0	0	11	1	12	2
At kiosk	Falvey/Childers	3-Dec	3	0	0	0	3	1
0.5 mi. S. of CG	Falvey/Childers	3-Dec	4	0	0	0	4	1

Table 8. Stone Lagoon elk classification data								
Location	Observers	Sample Period	Bull	Spike	Cow	Calf	Total	Rating
West of 101	Trevor et. al.	15-Nov	2	2	55	11	70	2
	Bill et. al.	7-Nov	3	5	65	10	84	2
	CM,BB,MP	15-Nov	4	7	62	19	92	2
East of 101	Baldwin	30-Sep	?	?	?	?	31	4
West of 101	Baldwin	30-Sep	6	1	21	6	34	2
East of 101	Wallen/Falvey	28-Oct	6	6	73	9	94	2
West of 101	Wallen	30-Oct	4	5	70	11	90	2

Birth rate continues to be relatively low in RNSP. This year's classification shows a calf/ 100 cow ratio of 12 to 32 per herd unit (Table 9). The herd units at Davison Ranch, Lower Redwood Creek, Stone Lagoon and Gold Bluffs beach all have calf/100 cow ratios of less than 20. This seems unusually low for a fall estimate on a population of unhunted elk.

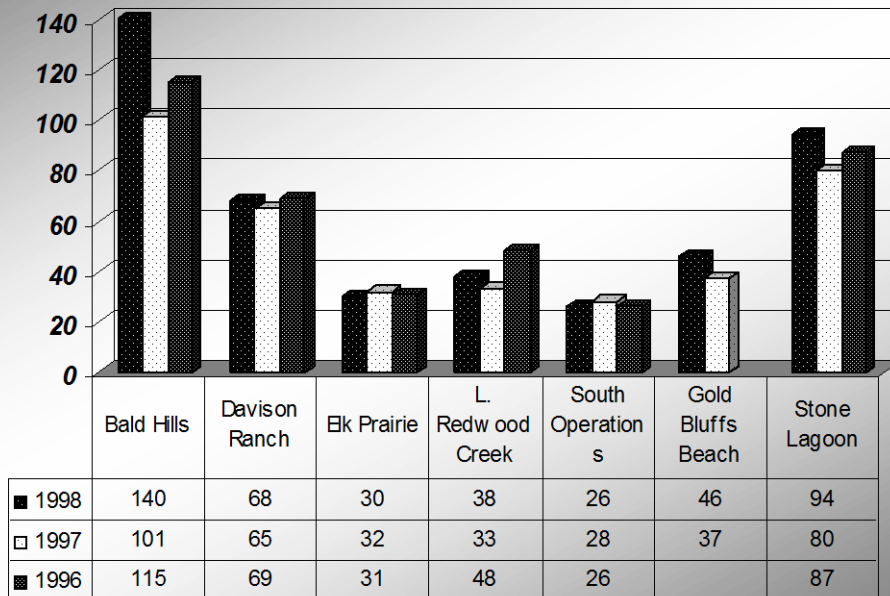
Table 9. 1998 Elk Classification Summary						
Location	Maximum Individual Count					calf/100 cows
	Bulls	Spikes	Cows	Calves	Total	
Bald Hills	5	13	98	30	140	32
Davison Ranch	19	3	42	6	68	18
Elk Prairie	2	2	21	5	30	24
Bypass	1	0	20	5	26	25
L. Redwood Creek	7	1	26	4	38	15
South Operations	8	2	14	4	26	29
Gold Bluffs Beach	7	3	33	4	46	12
Stone Lagoon	6	7	73	11	94	16

Herd unit calf/cow ratios have been consistently low for the last three years (Table 10). Harper et al (1985) reported that calf / 100 cow ratios for Roosevelt elk in Oregon average 39 (range = 32 to 47). Recent data gathered in RNSP are well below the ratios reported in Oregon. The Oregon estimates were from herd units that also were subject to hunting mortality. Potential causes of low reproduction, that warrant further study in RNSP, include local diseases and physical condition of the cows. These data lead to the question of whether density dependent population regulation mechanisms are influencing reproductive success.

Table 10. Summary of calf/100 cow ratio for each herd unit for 1996 to 1998.			
Location	1998	1997	1996
Bald Hills	32	20	25
Davison Ranch	18	27	23
Elk Prairie/Bypass	24	33	8
L. Redwood Creek	15	11	39
South Operations	29	35	45
Gold Bluffs Beach	12	38	No data
Stone Lagoon	16	12	23

Cursory review of the three years of classification counts show fluctuating numbers of animals in some herd units (Figure 1). Regardless of obstacles, there should be some interchange of animals between herd units (Harper et. al. 1985, McCullough 1996). However, Mandel and Kitchen (1979) presented evidence that the Boyes Prairie and Gold Bluffs herd units were relatively stable groups. Is this true for all herd units in RNSP? No one has tested this hypothesis since studies of marked animals were completed in the early 1970's (Mandel and Kitchen 1979, Franklin 1968, Lieb 1973).

Figure 1. Total number of elk per herd unit



Management issues and short-term recommendations

Management issues include elk wandering on to private ranchlands where their acceptance is unwanted, potential to create safety problems along highway 101, a lure for poaching actions within the park boundaries, and entanglement of elk in old fences and discarded wiring. An understanding of population dynamics is necessary to make informed decisions to resolve these management issues. Population dynamics data needed by park managers include birth rate, death rate, immigration rate, and age structure of the population.

RNSP needs to improve monitoring capabilities to become more proactive at estimating critical population statistics. I suggest that the first step be a program for marking a minimum of 10% of the individuals in each herd unit. The marking system should provide for individual recognition of animals. This would provide the opportunity to monitor abundance through mark/re-sight methods and to begin developing a database on lifetime productivity of individual females in the various herd units.

Additional short-term goals should focus on monitoring annual pregnancy rate, movements between herd units, and causes of death for elk using park habitats. Gathering these data may require additional fund raising through applications for grants of potentially finding a graduate student interested in pursuing a thesis question related to these topics.

Classification counts should continue with the objective of improving reliability of count data. Multiple classifications of individual herd units are imperative.

A management planning process (i.e. scoping, environmental assessment and then final management plan) should be initiated to compile guidelines for establishing long-term management goals for protecting Roosevelt elk in RNSP.

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